

What is claimed is:

1. A MEMS device having flexure elements with non-linear restoring force, comprising:

a substrate;

support elements formed on the substrate;

a moveable element floated over the substrate by the support elements so as to move;

flexure elements for elastically suspending the moveable element on the support elements;

a driving element for moving the moveable element;

repulsive elements for increasing the repulsive force of the flexure elements when the flexure elements supporting the moveable element are resiliently deformed by a predetermined amount during movement of the moveable element.

2. The MEMS device of claim 1, wherein the repulsive elements having a predetermined size include stoppers positioned between the flexure elements and static elements fixed on the substrate opposite to the flexure elements.

3. The MEMS device of claim 2, wherein the stoppers are positioned at portions of the static elements opposite to the flexure elements so that middle portions of the flexure elements contact the stoppers when the flexure elements are resiliently deformed by a predetermined amount.

4. The MEMS device of claim 2, wherein the stoppers are formed on middle portions of the flexure elements opposite to the static elements so that the stoppers contact the static elements when the flexure elements are resiliently deformed by a predetermined amount.

5. The MEMS device of any one of claims 1 through 4, wherein the moveable element moves in a direction perpendicular to the plane of the substrate.